SUSTAINABLE DEVELOPMENT GOALS

Workshop of Quality on Statistics for SDG Indicators
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Session 1: Global Quality Framework for Sustainable Development Goal Indicators - Part 1

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Importance of data quality for the SDGs
- Member States at the General Assembly -

- The General Assembly in its Resolution 70/1, "Transforming our world: the 2030 Agenda for Sustainable Development", adopted at the United Nations summit for the adoption of the post-2015 development agenda on 25 September 2015 stressed that <u>follow-up and review processes at all levels will be informed by data which is high-quality, accessible, timely, reliable and disaggregated</u> by income, sex, age, race, ethnicity, migration status, disability and geographic location and other characteristics relevant in national contexts (para 74.g).

- Only two UN resolutions on statistics

  - General Assembly resolution A/RES/68/261 on the Fundamental Principles of Official Statistics (adopted on 29 January 2014)

  - General Assembly resolution A/RES/71/313 on the Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (adopted on 6 July 2017)

Importance of data quality for the SDGs
- Member States at the Statistical Commission -

- The Statistical Commission at its 48th session in March 2017 agreed to update the UN NQAF template and guidelines of 2012 **to address the new challenges posed by the enlarged data ecosystem and the 2030 Agenda for Sustainable Development**. In its decision 48/106 the Commission emphasized the importance **of ensuring the quality of data derived from new sources and new data providers, including those outside the official statistical system**.

- The Statistical Commission at its 50th session in March 2019 adopted the United Nations National Quality Assurance Frameworks Manual for Official Statistics (UN NQAF Manual) and the recommendations contained therein (decision 50/106). **The Commission welcomed the Manual as an important contribution in guiding countries in the implementation of a national quality assurance framework, including for new data sources, new data providers, and for data and statistics of the Sustainable Development Goal indicators.**

Five core recommendations

Derived from GA resolutions and the Fundamental Principles of Official Statistics (FPOS)

#1   **It is recommended** that in order to be effective, the fundamental values and principles that govern development, production and dissemination of official statistics have to be guaranteed by legal and institutional frameworks and be respected at all political levels and by all stakeholders in national statistical systems. [*guarantee FPOS*]

#2   **It is recommended** that countries include the requirements of quality assurance in their national statistical legislation and other legislation mandating production of statistics for official use (derived from Principle 1 of FPOS). [*mandate QA*]

#3   **It is recommended** that countries establish a national quality assurance framework for official statistics and that all members of the national statistical system are committed to continually assess, improve and report on the quality of official statistics, as well as on the quality of data and statistics used in the production of official statistics as required. (derived from Principle 1 of FPOS). [*establish NQAF, all NSS members to be committed to QA*]

Five core recommendations

Derived from GA resolutions and the Fundamental Principles of Official Statistics (FPOS)

#4 **It is recommended** that the national quality assurance framework for official statistics is being developed in consideration or in alignment with the UN National Quality Assurance Framework or similar existing quality assurance frameworks (derived from Principle 1 and Principle 2 of FPOS). [_NQAF to be aligned with standard_]

#5 **It is recommended** that the national quality assurance framework is implemented at the national statistical office and throughout the entire national statistical system. Furthermore**, it is recommended** that the national quality assurance framework is applied to all data and statistics produced outside of the national statistical system that is disseminated with the help and support of a member of the national statistical system or that is used for government decision making, as deemed appropriate and required (derived from Principle 1 of FPOS). [_implement NQAF throughout NSS_]

What is quality in Statistics (Definition)

Quality is the degree to which a set of inherent characteristics of an object fulfils requirements (see International Standards Organization, ISO 9000:2015). In the context of statistical organizations, the object is the statistical output or product, the process, the institutional environment or the whole statistical system

A simple definition of quality is "fit for use" or "fit for purpose".

1. It is the users' needs that define the quality. Different users may have different needs that must be balanced against each other to give the quality concept a concrete content.

2. Over the past twenty years, statistical agencies have arrived at the consensus that the concept of quality of statistical information is multi-dimensional and that there is no one single measure of quality.

3. For a statistical product, the general definition of quality is operationalized by specifying a set of factors or dimensions that characterize its quality: Relevance, Accuracy and reliability, Timeliness and punctuality, Accessibility and clarity, Coherence and comparability.

4. The dimensions of quality are interrelated and, there are trade-offs between some of them. Adequate management of each of them is essential. At the same time, they must be seen in relation to each other within the statistical production processes.

Quality Management Framework (Definition)

Definition: A Quality management framework provides a coherent and holistic system as a basis for quality management

1. There are <u>various general quality management frameworks</u> applicable to any organization, such as Total Quality Management (TQM), International Organization for Standardization (ISO) , Six Sigma, European Foundation for Quality Management (EFQM), Balanced Scorecard, Lean and Lean Six Sigma. These frameworks are largely based on common definitions and principles, but their main focus and formalization vary.

2. For example, <u>ISO</u> emphasizes certification and standardization of "processes", while <u>Six Sigma</u> focuses on quality control of the "products/outputs" using statistical methods. <u>Lean</u> emphasizes improvement in efficiency by reducing waste.

3. In many ways, TQM, which was developed in the last century, is the foundation of all general quality frameworks. <u>TQM is "a set of systematic activities carried out by the entire organization to effectively and efficiently achieve company objectives so as to provide products and services with a level of quality that satisfies customers, at the appropriate time and price</u>".

4. The strategic core of all major TQM models is <u>continuous improvement</u>, often illustrated with reference to the Plan-Do-Check-Act cycle (PDCA) made popular by Deming. This cycle is a four-step process which guides all changes for continuous improvement.

Statistical Quality Management Frameworks (Definition) and national quality assurance frameworks

- The above-mentioned <u>general quality frameworks</u> inspired the <u>statistical quality frameworks</u> such as the
  - European Statistics Code of Practice (ES CoP),
  - the International Monetary Fund's Data Quality Assessment Framework (DQAF),
  - the Recommendation of the Organisation for Economic Co-operation and Development (OECD) on Good Statistical Practices and
  - UN Principle presented in Chapter 3.

- These are also <u>inspired by and consistent with the FPOS</u> which emphasizes independence, impartiality and protection of data on individuals. Such requirements of official statistics were first formulated jointly in the FPOS in 1992.

- Core recommendation #4 - **It is recommended** that the national quality assurance framework for official statistics is being developed in consideration or in alignment with the UN National Quality Assurance Framework or similar existing quality assurance frameworks (derived from Principle 1 and Principle 2 of FPOS).

- <u>Note on terminology</u>: Quality management includes quality assurance but both terms are often used synonymously; quality management is a more overarching concept while quality assurance implies a greater focus on concrete actions.

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

UN NQAF arranges its quality principles and associated requirements into four levels, ranging from the over-arching institutional and cross-institutional level through the statistical production processes to the outputs:

Level A: Managing the statistical system

Level B: Managing the institutional environment

Level C: Managing statistical processes

Level D: Managing statistical outputs
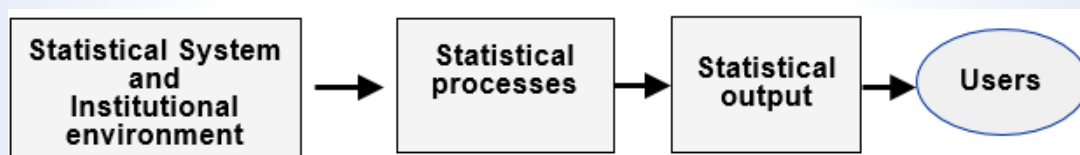
United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

❑ Each level contains a concise set of quality principles and requirements to guarantee quality in that aspect of quality assurance.

❑ Annex A provides elements to be assured for each requirement.

Principle, requirement, element to be assured:

- A **principle** is a general proposition, or procedure, to which statistical agencies and organizations are committed and that will guide them in meeting their quality related objectives.

- A **requirement** is something needed in order to ensure the implementation of the United Nations National Quality Assurance Framework (UN NQAF) in Chapter 3.

- An **element to be assured** (provided in the Annex A) is a specific aspect of the UN NQAF that identifies possible activities, methods and tools to meet the requirement. In this sense an element to be assured reflects a good practice that is observed to work well in one or several national statistical offices (NSOs) or other producers of official statistics, and thus is a candidate to be promoted for use in other statistical agencies. They should be followed or assured as long as they are applicable.

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

Level A. Managing the statistical system

Principle 1 - Coordinating the national statistical system
Principle 2 - Managing relationships with stakeholders
Principle 3 - Managing statistical standards

Level B. Managing the institutional environment

Principle 4 - Assuring professional independence
Principle 5 - Assuring impartiality and objectivity
Principle 6 - Assuring transparency
Principle 7 - Assuring statistical confidentiality and data security
Principle 8 - Assuring the quality commitment
Principle 9 - Assuring adequacy of resources

Level C. Managing statistical processes

Principle 10 - Assuring methodological soundness
Principle 11 - Assuring cost-effectiveness
Principle 12 - Assuring appropriate statistical procedures
Principle 13 - Managing the respondent burden

Level D. Managing statistical outputs

Principle14 - Assuring relevance
Principle15 - Assuring accuracy and reliability
Principle16 - Assuring timeliness and punctuality
Principle17 - Assuring accessibility and clarity
Principle18 - Assuring coherence and comparability
Principle19 - Managing metadata

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

Level A. Managing the statistical system

The national statistical system (NSS) comprises the statistical agencies or units within a country that develop, produce and disseminate official statistics on behalf of the national government, normally with the national statistical office (NSO) as the leading agency. Coordination of this system and managing relations with all stakeholders is a precondition for the quality and efficient production of official statistics. Ensuring the use of common statistical standards throughout the system is an important part of this management.

- **Principle 1: Coordinating the national statistical system**
- **Principle 2: Managing relationships with data users, data providers and other stakeholders**
- **Principle 3: Managing statistical standards**

Level B. Managing the institutional environment

The institutional environment is one of the prerequisites to ensure the quality of statistics. Principles to be assured are professional independence, impartiality and objectivity, transparency, statistical confidentiality, quality commitment and adequacy of resources.

- **Principle 4: Assuring professional independence**
- **Principle 5: Assuring impartiality and objectivity**
- **Principle 6: Assuring transparency**
- **Principle 7: Assuring statistical confidentiality and data security**
- **Principle 8: Assuring the quality commitment**
- **Principle 9: Assuring adequacy of resources**

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

Level C. Managing statistical processes

International standards, guidelines and good practices are fully observed in the statistical processes used by the statistical agencies to develop, produce and disseminate official statistics, while constantly striving for innovation. The credibility of the statistics is enhanced by a reputation for good management and efficiency. The relevant principles to be assured are methodological soundness, cost effectiveness, appropriate statistical procedures and managing the respondent burden.

- **Principle 10: Assuring methodological soundness**
- **Principle 11: Assuring cost-effectiveness**
- **Principle 12: Assuring appropriate statistical procedures**
- **Principle 13: Managing the respondent burden**

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

Level D. Managing statistical outputs

Statistics serve the needs of national governments, research institutions, businesses, the general public and the international community. Output quality is measured by the extent to which the statistics are relevant, accurate and reliable, timely and punctual, readily accessible and clear for the users, and coherent and comparable across geographical regions and over time.

- **Principle 14: Assuring relevance**
- **Principle 15: Assuring accuracy and reliability**
- **Principle 16: Assuring timeliness and punctuality**
- **Principle 17: Assuring accessibility and clarity**
- **Principle 18: Assuring coherence and comparability**
- **Principle 19: Managing metadata**

Managing statistical outputs
– quality dimensions of statistical products

Quality dimensions (definitions): For statistics, the general definition of quality is operationalized by specifying a set of factors or dimensions that characterize the quality of the product. The United Nations National Quality Assurance Framework (UN NQAF) identifies quality dimensions linked to statistical products in principle 14 – 18 covering the following dimensions (some principles cover two dimensions which are closely related):

- Relevance: The extent to which the statistics satisfy the needs of the users. (Principle 14)

- Accuracy: Closeness of estimates to the exact or true values that the statistics were intended to measure. (Principle 15)

- Reliability: Closeness of the initially estimated value(s) to the subsequent estimated value(s) if preliminary figures are disseminated. (Principle 15)

- Timeliness: The length of time between the end of a reference period (or date) and dissemination of the statistics. (Principle 16)

- Punctuality: The time lag between the release date and the target date by which the data or statistics should have been delivered. (Principle 16)

Managing statistical outputs
– quality dimensions of statistical products

- Accessibility: The ease and conditions with which statistical information can be obtained. (Principle 17)

- Clarity: The availability of appropriate documentation in relation to the statistics and to the additional assistance which producers make available to users. (Principle 17)

- Coherence: The ability to reliably combine statistics and datasets in different ways and for various uses. Consistency is often used synonymously with coherence. (Principle 18)

- Comparability: The extent to which differences between statistics from different geographical areas, non-geographical domains, or over time, can be attributed to differences between the true values of the statistics. (Principle 18)

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

Level D. Managing statistical outputs

Principle 14: Assuring relevance

Statistical information shall meet the current and/or emerging needs or requirements of its users. Without relevance, there is no quality. However, relevance is subjective and depends upon the varying needs of users. The statistical agency's challenge is to weight and balance the conflicting needs of current and potential users to produce statistics that satisfy the most important and highest priority needs within the given resource constraints. Principle 14 is mainly supported by FPOS 1.

Requirement 14.1: Procedures are in place to identify users and their needs and to consult them about the content of the statistical work program.

Requirement 14.2: Users' needs and requirements are balanced, prioritized and reflected in the work program.

Requirement 14.3: Statistics based on new and existing data sources are being developed in response to society's emerging information needs.

Requirement 14.4: User satisfaction is regularly measured and systematically followed up.

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

Level D. Managing statistical outputs

Principle 15: Assuring accuracy and reliability

Statistical agencies should develop, produce and disseminate statistics that accurately and reliably portray reality. The accuracy of statistical information reflects the degree to which the information correctly describes the phenomena it was designed to measure, i.e. the degree of closeness of estimates to true values. Principle 15 is mainly supported by FPOS 1.

Requirement 15.1: Source data, integrated data, intermediate results and statistical outputs are regularly assessed and validated.

Requirement 15.2: Sampling errors are measured, evaluated and documented. Non-sampling errors are described and, when possible, estimated.

Requirement 15.3: Studies and analyses of revisions are carried out and used to improve data sources, statistical processes and outputs.

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

Level D. Managing statistical outputs

Principle 16: Assuring timeliness and punctuality

Statistical agencies should minimize the delays in making statistics available. Timeliness refers to how fast – after the reference date or the end of the reference period – the data and statistics are made available to users. Punctuality refers to whether data and statistics are delivered on the promised, advertised or announced dates. Principle 16 is mainly supported by FPOS 1.

Requirement 16.1: Timeliness of the statistical agency's statistics comply with international standards or other relevant timeliness targets.

Requirement 16.2: The relationship with data providers is managed with respect to timeliness and punctuality needs.

Requirement 16.3: Preliminary results can be released when their accuracy and reliability is acceptable.

Requirement 16.4: Punctuality is measured and monitored according to planned release dates, such as those set in a release calendar.

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual
Level D. Managing statistical outputs

Principle 17: Assuring accessibility and clarity

Statistical agencies should ensure that the statistics they develop, produce and disseminate can be found and obtained without difficulty, are presented clearly and in such a way that they can be understood, and are available and accessible to all users on an impartial and equal basis in various convenient formats in line with open data standards. Provision should be made for allowing access to microdata for research purposes, in accordance with an established policy which ensures statistical confidentiality. Principle 17 is mainly supported by FPOS 1.

Requirement 17.1:   Statistics are presented in a form that facilitates proper interpretation and meaningful comparisons.

Requirement 17.2:   A data dissemination strategy and policy exist and is made public.

Requirement 17.3:   Modern information and communication technology is used for facilitating easy access to statistics.

Requirement 17.4:   Access to microdata is allowed for research purposes, subject to specific rules and protocols on statistical confidentiality that are posted on the statistical agency's website.

Requirement 17.5:   Mechanisms are in place to promote statistical literacy.

Requirement 17.6:   The statistical agencies have a dedicated focal point that provides support and responds to inquiries from users in a timely manner.

Requirement 17.7:   Users are kept informed about the quality of statistical outputs.

United Nations National Quality Assurance Framework (UN NQAF) contained in Chapter 3 and Annex A of the UN NQAF Manual

Level D. Managing statistical outputs

Principle 18: Assuring coherence and comparability

Statistical agencies should develop, produce and disseminate statistics that are consistent, meaning it should be possible to combine and make joint use of related data including data from different sources. Furthermore, statistics should be comparable over time and between areas. Principle 18 is mainly supported by FPOS 1.

Requirement 18.1: International, regional and national standards are used with regard to definitions, units, variables and classifications.

Requirement 18.2: Procedures or guidelines are in place to ensure and monitor internal, intra-sectoral and cross-sectoral coherence and consistency.

Requirement 18.3: Statistics are kept comparable over a reasonable period of time and between geographical areas.

THANK YOU